



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,326	07/29/2003	Stephen Roux	1857.1940000	6147

26111 7590 01/25/2005

STERNE, KESSLER, GOLDSTEIN & FOX PLLC
1100 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

MOHAMEDULLA, SALEHA R

ART UNIT PAPER NUMBER

1756

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/628,326

Applicant(s)

ROUX ET AL.

Examiner

Saleha R. Mohamedulla

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-13 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-13 are pending.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-13 rejected under 35 U.S.C. 102(b) as being anticipated by US# 6,239,863 to Catey et al.

Catey teaches a removable cover for a reticle. A removable cover for protecting a reticle used in a lithography system is described. The removable cover includes a frame and a membrane supported by the frame. The membrane is transparent to an inspection wavelength such that the reticle can be inspected with the removable cover in place. This removable cover protects the reticle when the removable cover is in place and is removable for lithographic exposure. The removable cover can further include at least one reticle fastener that applies force to the reticle thereby preventing movement of the removable cover relative to the reticle when the removable cover is in place. A plurality of fasteners are used to position and secure the removable cover and reticle. A method of performing lithography and a lithographic system are also described (Abstract; col. 2, lines 35-45). Turning to a structure of the removable cover according to the instant invention, FIG. 1A illustrates a preferred embodiment of the removable cover 100. The removable cover includes a frame 110. Frame 110 includes an opening 121 corresponding to an inspection window. The material used for the frame should be selected with several considerations in mind. The material should be compatible with standard cleaning

Art Unit: 1756

agents used with lithography systems. The material should not produce out gassing of amines, or other undesirable substances harmful to the lithographic process. The material should further be resistant to mechanical degradation. Since the removable cover is used in the high vacuum environment of EUV lithography, these material characteristics should hold true in that environment. Examples of possible materials that could be used includes fiber reinforced molded polymers, Derlin (trademark) or PTFE (Teflon (trademark)) coated metals such as aluminum or titanium. Other materials may be used without departing from this invention. Such materials could be selected by one skilled in the art given this disclosure. Frame 110 further includes a filter 111. This filter allows gas flow through the frame 110 while preventing passage of particles to the reticle. Accordingly, the cover is able to breathe during pump and vent cycles. Frame 110 further includes flanges 112 and 113. These flanges can be formed integrally with the frame, as is illustrated. As shown in the figure, flanges 112 and 113 extend in a direction perpendicular to the window defined by the frame. These flanges serve to partially surround lateral edges of a reticle when the removable cover is in place on a reticle. This relationship is shown in FIG. 1B, for example, and will be discussed below in more detail. Frame 110 further includes ridges 114, 115, and 116. As can be seen in FIG. 1, a first ridge 114 is formed on the frame adjacent the first flange 112. This first ridge 114 is used as a first resting point for a reticle when the removable cover is in place on the reticle. Second and third ridges 115, 116 are formed on the frame adjacent the second flange 113. The second and third ridges are used as second and third resting points for a reticle when the removable cover is in place on the reticle. While one skilled in the art, given this disclosure, would understand that

Art Unit: 1756

more or fewer ridges could be provided without departing from the invention, the preferred embodiment includes three ridges as this number is ideal for stabilizing a reticle on the removable cover. Furthermore, while the ridges 114, 115, and 116 are provided to minimize contact between the removable cover and reticle, thereby minimizing particle generation friction, a removable cover without ridges would be within the scope of the instant invention, as would be apparent to a person skilled in the relevant art given this disclosure. Finally, while the ridges 114, 115, and 116 produce a gap between the frame 110 and a reticle, the height of the ridges can be made small enough so that gas conductance through the filter 111 is higher than through the gap created by ridges 114, 115, and 116. As can further be seen in FIG. 1A, second and third ridges 115, 116 extend up the interior side of second flange 113. These second and third ridges work in conjunction with first and second fasteners 117, 118 to secure the removable cover to the reticle, as discussed more fully below. The frame 110 further includes first and second fasteners 117, 118 located in the first flange 112. These first and second fasteners are preferably bi-stable fasteners. As used herein, the phrase "bi-stable" is meant to define a fastener that has two stable conditions: fastened and unfastened. The fastener will remain in either position without additional control or force applied to the fastener. Such fasteners, for example, may be formed as rotationally actuated fasteners that each include a bi-stable spring serving to hold the fasteners in either a fastened or unfastened position. Such an arrangement is shown, for example, in FIG. 2, discussed more fully below. Fasteners 117, 118, when fastened, bias the reticle towards second and third ridges 115, 116. Thus, in the preferred embodiment, when the removable cover is in place on the reticle, the reticle is in

Art Unit: 1756

contact with the removable cover at seven points: first, second, and third ridges 114, 115, 116 on the surface of the removable cover facing the reticle; second and third ridges 115, 116 extending on the interior side of the second flange 113, and at the first and second fasteners 117, 118. This is illustrated in FIG. 1B, which shows a removable cover 100 in place on a reticle 120 having a patterned side facing the removable cover. In this manner, the reticle is firmly secured to the removable cover thereby eliminating movement of the reticle relative to the cover. At the same time, contact between the reticle and the cover is minimized. Since the reticle 120 is used in reflective lithography systems, any particles that settle on the side of the reticle away from the cover will not contribute to degradation of the reflected image. While one skilled in the art, given this disclosure, would understand that the fasteners, or ridges, or both, could be omitted without departing from the instant invention, these elements are included in the preferred embodiment to minimize particle generation (col. 5, line 30-col. 6, line 55).

Conclusion

2. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Saleha Mohamedulla whose telephone number is (571) 272-1387. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

Art Unit: 1756

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Saleha R. Mohamedulla
Patent Examiner
Technology Center 1700
January 24, 2005